United States
Environmental Protection
Agency

Solid Waste
and Emergency Response
(5306W)

EPA530-R-97-011
September 1997
http://www.epa.gov

EPA

Measuring Recycling
A Guide for State and Local Governments

Printed on paper that contains at least 20 percent postconsumer fiber.

Measuring Recycling
A Guide for State and Local Governments

Contents

List of Tables

About This Guide

This guide is designed to help state and local agencies measure municipal solid waste (MSW) recycling. It contains instructions, definitions, case studies, tips, forms, and worksheets to help calculate an MSW recycling rate. Information is provided to help track broad categories of recycled materials and commodity-specific categories, if desired. All features of the guide, including the survey forms and worksheets, can be used by both state and local governments that measure recycling.

For more information, or to order documents on issues related to recycling measurement, call the U.S. Environmental Protection Agency's RCRA/Superfund Hotline at 800 424-9346.

Acknowledgments

Many state and local officials, solid waste professionals, and recycling experts with extensive experience in the recycling measurement field contributed to the development of this guide. The guide also builds upon work initiated by the State Data Collection Project, conducted from 1992 through 1994 by the Council of State Governments under a grant from the U.S. Environmental Protection Agency (EPA).

EPA would like to thank the following individuals for their assistance in developing this guide:

Council of State Governments

Laura Kliewer Foster, Midwestern Office

Ellen Pratt, Northeast Recycling Council

Peer Review Group

Kip Eagles, Washington Department of Ecology

Tony Hainault, Minnesota Office of Environmental Assistance

Carl Hursh, Pennsylvania Department of Environmental Protection

Mark Lennon, New Hampshire Department of Environmental Services

Edgar Miller, National Recycling Coalition

Seth Phillips and Sharon Edgar, Michigan Department of Environmental Quality

Woody Raine and Bill Carter, Texas Natural Resources Conservation Commission

Joan Rohlfs, Metropolitan Washington Council of Governments

Focus Group

Harry Benson, Wellman, Inc.

Tim Breneisen, Lancaster County Solid Waste Management Authority, Pennsylvania

Phil Carnevale, Schiavone-Bonomo

Pablo Collins, The Davidson Colling Group

Robert Davis, Browning-Ferris Industries

Michael Poland, Environmental Recycling, Inc.

Bob Reichard, Laidlaw Waste Systems

Carlos Rovelo, Rock-Tenn Company

Nathan Tyler, Glass Packaging Institute

National Recycling Coalition Workshop

Nancy Carr, California Integrated Waste Management Board

Ron Henricks, Florida Department of Environmental Protection

Mitra Khazi, Indiana Department of Environmental Management

Peter Spendaloe, Oregon Department of Environmental Quality

Vicki Viens, Vermont Department of Environmental Conservation

Other State and Local Government Representatives Who Assisted

Dave Benke, Minnesota Office of Environmental Assistance

Ann Bernstein, Minnesota Office of Environmental Assistance

Esther Bowring, Montgomery County, Maryland, Department of Environmental Protection

William Colden, New York Department of Environmental Conservation

Gerry Geiger, Indiana Department of Environmental Management

Rodney Glotfelty, Garrett County, Maryland, Office of Solid Waste and Recycling

Karen Harrington, Minnesota Office of Environmental Assistance

Ed Harris, Fairfax County, Virginia, Department of Public Works

Judy Henderson, Oregon Department of Environmental Quality

Suzanne Laland, Onondaga County, New York, Resource Recovery Agency

Virginia Lipscomb, Maryland Department of the Environment

Jacquie Moon, Oregon Department of Environmental Quality

Raymond Moreau, Florida Department of Environmental Protection

Scott Mouw, North Carolina Office of Waste Reduction

Kerry Overlee, Mecklenberg County, North Carolina, Department of Engineering and Building Standards

Lynn Schramel, Monroe County, New York, Department of Environmental Services

Caroline Smith, Anoka County, Minnesota, Integrated Waste Management Unit

Phil Spranger, Wisconsin Department of Natural Resources

David White, Ohio Environmental Protection Agency

Introduction

SECTION 1

Recycling is an important part of integrated solid waste management (ISWM)—the complementary use of source reduction, recycling, combustion, and landfilling to manage municipal solid waste (MSW). In the ISWM hierarchy, recycling (including composting) is the preferred waste management option, after source reduction, to reduce potential risks to human health and the environment, divert wastes from landfills and combustors, conserve energy, and slow the depletion of nonrenewable natural resources. This guide can help you measure your progress in recycling and promote consistency among states and localities.

In recent years, many state and local governments have set recycling goals and implemented systems for determining their progress in meeting those goals. As of 1993, approximately 40 states were collecting and maintaining data on recycling; 26 of these calculated an actual recycling rate.[1] "Measuring recycling" typically entails surveying generators, collectors, processors, and end users of MSW and recyclables to collect data on one or more of the following:

- Overall tonnages of municipal waste discarded and materials recycled.
- Tonnages of broad categories of materials, such as paper, recycled.
- Tonnages of specific categories of materials, such as newsprint, recycled.

Recycling measurement is different from the measurement of waste diversion in that data are collected on the amount of materials recycled or composted rather than on the amount of disposed solid waste.

Currently, not everyone defines recycling or the processes that constitute recycling in the same way. Definitions of MSW also vary. There is no standard approach for how or where to collect the needed data. The methods used to calculate a recycling rate also differ from one area to another. All of these factors can make it difficult to collect and analyze data and to compare the effectiveness of recycling programs from one region to another.

From 1992 to 1994, the Council of State Governments conducted the State Data Collection project under a U.S. Environmental Protection Agency (EPA) grant. The project identified current and future state plans for data collection and opportunities for consistency in recycling measurement. The project concluded that a uniform, national method for measuring recycling rates be developed. Subsequent interviews with state officials indicated states are open to switching to a standard

[1]Council of State Governments. 1993. *Data Collection for Recyclable Materials Collection and Marketing: Interim Report.*

national system if the new approach gives them flexibility and guidance on important data collection and measurement issues. Moreover, state officials bound to their existing data collection systems, generally due to legislated requirements, indicated they were willing to recalculate their recycling rate using a standard methodology if one were developed. Officials in states that do not currently collect data indicated that the development of standard recycling measurement techniques could assist in convincing decision-makers to support future data collection efforts and would provide an off-the-shelf tool for creating a recycling measurement program. As a result of these conclusions, EPA worked with state and local officials to develop this recycling measurement guide.

This guide is designed to help promote consistency in the way recycling data are collected, measured, and reported by state and local governments. In order to achieve uniformity and address wide variations in what is counted as MSW and recycling from one area to another, a standard scope of materials to be measured is needed. EPA reviewed a wide range of scopes when developing the standard measurement methodology presented in this guide. The selected scope relies on EPA's historical definition of MSW as contained in the EPA report, *Characterization of Municipal Solid Waste in the United States.* This scope was chosen because it is broadly accepted and understood, the data are familiar and accessible throughout the 50 states, and default values can be extracted from the report if measurers have incomplete data. For practical purposes, the standard scope is wholly consistent with the definitions and distinctions made in this report.

Not all types of solid waste are included in the scope. Various items, including construction and demolition debris, manufacturing waste, and overissue newspapers to name a few, are excluded from the standard scope. Although recovery of these materials is not factored into the standard calculation used to determine a recycling rate, EPA encourages state and local governments to continue their efforts to promote the recycling of these items. In addition, space for collecting these data is provided on the survey forms included with this guide, which are designed to help obtain data on MSW disposal and recycling.

For those agencies desiring to perform recycling measurement for the first time, this guide provides a straightforward, cost-effective, and standardized system for compiling and calculating the necessary data. A step-by-step process for developing a recycling measurement program is outlined, complete with tips and case studies. This guide also provides information for those agencies with a measurement program already in place but interested in switching to the standardized approach. In addition, agencies interested in simply recalculating an overall recycling rate to be consistent with the standardized methodology will find this guide helpful.

Although numerous tips are offered in the guide for obtaining accurate data, EPA recognizes the need to balance the resources spent on recycling measurement against the larger goal of advancing integrated solid waste management. For this reason, EPA allows for the estimation of data in certain instances, providing that estimates are based on good, solid knowledge of the sources and flow of MSW within a region.

The methodology and recommendations presented in this guide represent the practical experience of many states and localities currently measuring recycling. Aside from establishing a voluntary, uniform method for calculating recycling rates, this guide offers state and local governments a number of benefits, including advice and recommendations for:

- Obtaining accurate data.
- Minimizing double counting.
- Identifying possible errors or omissions in data.
- Establishing relationships with the private sector to obtain commercial recycling information.
- Ensuring the private sector's confidentiality when reporting data.
- Using national waste characterization data to estimate waste generation when disposal data are not available.
- Accounting for imports and exports of MSW and recyclable materials.
- Streamlining and improving data collection.
- Reducing recycling measurement costs.

Although state and local governments can benefit from the information contained in this guide without adopting the standard recycling measurement methodology, doing so has many advantages. Standard data collection and calculation methods (including the

use of the survey forms included with this guide) can help achieve:

- Greater cooperation from information sources supplying data, who appreciate efforts to streamline and standardize reporting requirements.
- More opportunities to exchange information and advance recycling measurement techniques, since similar methods are employed nationwide.
- Fewer opportunities for manipulation of recycling data in order to meet recycling goals.
- Time and cost savings for everyone involved in data collection and analysis.
- Enhanced ability to improve waste handling and recycling programs, since standard recycling rates are produced that can be tracked against other programs.

In addition, standardization benefits the businesses and industry representatives that supply recycling and waste disposal data to state and local agencies. A recycling measurement system that involves standard definitions, survey forms, and reporting requirements simplifies and streamlines the reporting process for these data sources and reduces the amount of time and resources they must expend.